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09/397,850	09/17/1999	ARLIN R. DAVIS	219.37206X00	9295

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EXAMINER

BURGESS, BARBARA N

ART UNIT	PAPER NUMBER
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2157

DATE MAILED: 08/06/2003

12

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/397,850

Applicant(s)

DAVIS, ARLIN R.

Examiner

Barbara N Burgess

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

### **DETAILED ACTION**

This is in response to applicant's request for reconsideration filed on June 30, 2003.

The prosecution of this application is reopened due to the remarks presented in the response filed June 30, 2003. A new non-final action is being submitted. Claims 1-24 are presented for further examination.

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-2, 9-10, and 17-18 are rejected under 35 U.S.C. 102(e) as being anticipated by Boucher et al. (hereinafter "Boucher", 6,226,680 B1).

As per claims 1, 9, and 17, Boucher discloses a method of reading data from a remote memory of a remote device to a local memory of a local device across a network, method comprising:

- Sending a message from the local device to the remote device, via the network, said message including a transport header indicating a message type (column 1, lines

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48-52, column 3, lines 35-46, column 4, lines 65-67, 21-23, column 5, lines 5-11, 31-44, column 6, lines 12-18, 30-32, column 7, lines 24-30, column 8, lines 9-11, 39-47, column 9, lines 40-49, column 11, lines 17-20, column 12, lines 5-15);

- Determining, at the remote device, if the transport header of said message identifies the message as a remote Direct Memory Access read operation (column 11, lines 1-20);
- If the transport header of said message identifies the message as said remote Direct Memory Access read operation, then performing a remote Direct Memory Access write operation at the local device in accordance to data elements included in said message (column 18, lines 30-48).

As per claims 2, 10, and 18, Boucher further discloses:

- Data elements in said rDMA read message identify a set of source buffers in the remote device which reference the remote host-side memory and a set of destination buffers in the local device that reference the local memory (column 18, lines 30-48).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 3-4, 11-12, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boucher in view of Osborne.

As per claims 3, 11, and 19, the teachings of Boucher does not explicitly disclose the source and destination buffers being registered with a Virtual Interface network interface controller of the remote and local device.

However, the teachings of Osborne disclose receiving a virtual address from a controller in the network interface and determining the physical address based on the virtual address (column 1, lines 65-67, column 2, lines 29-31, column 8, lines 16-20, 48-50, 52-54). Therefore, Osborne implicitly discloses source and destination buffers being registered with the Virtual Interface network interface controller.

One of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate a Virtual Interface network interface controller in Boucher's method to ensure appropriate data transfer protection and reduce the interaction of the operating system, which in turn conserves host processing cycles enabling an increase in the number of cycles available to application programs while decreasing the overall time it takes to receive messages.

As per claims 4, 12, and 20, Osborne further discloses data elements of the rDMA read message specifying the source buffers and destination buffers as multiple data segments with offsets and designating a channel of the Virtual Interface (VI) as a

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data path for the rDMA write operation (column 7, lines 7-9, column 8, lines 37-39, column 9, lines 44-55, column 11, lines 12-15, 36-37, column 13, lines 30-32, column 22, lines 48-49).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate the use of data segments with offsets and a channel of the Virtual Interface as the data path in Boucher's method to ensure appropriate data transfer protection and reduce the interaction of the operating system, which in turn conserves host processing cycles enabling an increase in the number of cycles available to application programs while decreasing the overall time it takes to receive messages.

5. Claims 5-6, 13-14, and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boucher in view of Osborne and in further view of Krishnan et al. (hereinafter "Krishnan", 4,922,416).

As per claims 5, 13, and 21, the combined teachings of Boucher and Osborne does not explicitly disclose a data element of the rDMA read message specifying a last data segment and completion of the rDMA read request.

However, in an analogous art, Krishnan discloses an end of message signal that indicates the completion of a process or data transfer (column 1, lines 31-33, 42-46, column 4, lines 48-50, 53-55, column 5, lines 36-38, column 7, lines 8-10, column 8,

lines 10-12). Therefore, Krishnan implicitly discloses a data element of the rDMA read message specifying a last data segment and completion of the rDMA read request.

One of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate a data element specifying the completion of a rDMA read request in Boucher's, in view Osborne, method in order for a data process or transfer to be completed quickly and efficiently by enabling other read/write requests to be executed.

As per claim 6, 14, and 22, the teachings of Boucher does not explicitly disclose data is read directly from the remote memory of the remote device into the local memory of the local device over a Virtual Interface (VI) without making an intermediate copy. However, this feature is evidenced in the teachings of Osborne (column 1, lines 40-42, 67, column 2, lines 1, 22-25, 42-45, 55-61).

Therefore, one of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate reading data directly from the remote memory into the local memory in Boucher's method in order to conserve host processing cycles, increase the number of cycles available to application programs, and decrease the delay in receiving messages.

6. Claims 7-8, 15-16, and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Boucher in view of Osborne and in further view of Krishnan et al.

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(hereinafter "Krishnan", 4,922,416) and in further view of Chow et al (hereinafter "Chow", 6,052,387).

As per claims 7, 15, and 23, the combined teaching of Boucher, Osborne, and Krishnan does not explicitly disclose write descriptors with a sequence inserted into the immediate data field on the last segment of each request.

However, in an analogous art, Chow discloses a last buffer bit, one field of the buffer descriptor, that indicates that the buffer descriptor is the last one of the linked list and thus the end of the data (column 4, lines 26-27, 38-40, 44-46, column 6, lines 39-41, column 8, lines 56-60, column 8, lines 12-16, column 9, lines 19-21, 25-26, 29-30). Therefore, Chow implicitly discloses write descriptors with a sequence inserted into the immediate data field on the last segment of each request.

One of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate the use of descriptors with the sequence inserted into the immediate data field on the last segment of each request in Boucher's method in order to determine the end of a data to be read or written thereby decreasing the time it takes to read or write data and reducing the delay in data transfer.

As per claims 8, 16, and 24, the combined teachings of Boucher and Osborne does not explicitly disclose the completion of data transfer is based on the immediate data that arrives with the last data segments of each write operation.



However, in an analogous art, Chow discloses a last buffer bit, one field of the buffer descriptor, that indicates that the buffer descriptor is the last one of the linked list and thus the end of the data process (column 4, lines 26-27, 38-40, 44-46, column 6, lines 39-41, column 8, lines 56-60, column 8, lines 12-16, column 9, lines 19-21, 25-26, 29-30). Therefore, Chow implicitly discloses the completion of data transfer is based on the immediate data that arrives with the last data segments of each write operation.

One of ordinary skill in the art at the time the invention was made would have found it obvious to implement or incorporate completion of the data transfer is based on the immediate data that arrives with the last data segments of each write operation in Boucher's method in order to determine the end of the written or read data thereby decreasing the time it takes to read or write data and reducing the delay in data transfer.

### ***Response to Arguments***

**The Office notes the following arguments:**

- (a) It is not clear as to which statutory basis the Examiner is relying upon to support the rejection of claims 1-2, 9-10, and 17-18 in Paper No. 6.
- (b) There is no disclosure anywhere in Schwab of Applicant's reading data from a remote memory of a remote device to a local memory of a local device, via a network, as expressly defined in each of Applicant's independent claims 1, 9, and 17.
- (c) There is no disclosure anywhere from Scwab of Applicant's exchange of data message between a local device and a remote device, via a network, and that the data message contains a transport header used to indicate a message type, i.e., a remote

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Direct Memory Access (rDMA) read operation so that a remote Direct Memory Access (rDMA) write operation can be performed in the manner defined in each of Applicant's independent claims 1, 9, and 17.

**In response to:**

- (a) The statutory basis of rejecting claims 1-2, 9-10, and 17-18 was 102(b).
- (b)-(c) Applicant's arguments filed June 30, 2003, have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara N Burgess whose telephone number is (703) 305-3366. The examiner can normally be reached on M-F (8:00am-4:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ario Ettinene can be reached on (703) 308-7562. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-7239 for regular communications and (703) 746-7240 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

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Barbara N Burgess  
Examiner  
Art Unit 2153

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July 30, 2003

  
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